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(FILE 'HOME' ENTERED AT 16:58:08 ON 04 MAY 2004)

FILE 'CA' ENTERED AT 16:58:19 ON 04 MAY 2004

L1 74 S (TOXIC? OR HAZARD?) (5A) (RUO2 OR RUO4 OR IRO4 OR RUTHEN?)

L2 59 S L1 NOT PY>1999

L3 5 S L2 AND (WORK? OR MANUFACT? OR INDUSTR? OR POLLUT?)

FILE 'BIOSIS' ENTERED AT 17:05:15 ON 04 MAY 2004

L4 19 S L2

L5 2 S L4 AND ACUTE

FILE 'MEDLINE' ENTERED AT 17:07:44 ON 04 MAY 2004

L6 13 S L2

=> d bib,ab 1-5 l3

L3 ANSWER 1 OF 5 CA COPYRIGHT 2004 ACS on STN

AN 95:48278 CA

TI **Working** conditions and the state of health of **workers** in contact with some ruthenium compounds

AU Akinfieva, T. A.; Solntseva, N. A.; Speranskaya, M. S.; Fedorenko, V. D.

CS I Med. Inst. im. Sechenova, Moscow, USSR

SO Gigiena Truda i Professional'nye Zabolevaniya (1981), (2), 44-5

LA Russian

AB Studies of **working** conditions at the plants for **manufg.** and using Ru compds. indicated that the **workers** are influenced by a complex of adverse effects, the most important of which is air **pollution** by Ru compds. An allergic reaction of the skin is 1 of the earliest indications of the effect of Ru on the human organism. Disorders of the upper respiratory ducts are attributed to sol. Cl-contg. Ru compds., as well as RhO2.

L3 ANSWER 2 OF 5 CA COPYRIGHT 2004 ACS on STN

AN 95:19077 CA

TI Basis for the maximum allowable concentration of ruthenium dioxide in the air of **work** areas

AU Akinfieva, T. A.

CS Med. Inst. im. Sechenova, Moscow, USSR

SO Gigiena Truda i Professional'nye Zabolevaniya (1981), (1), 46-7

LA Russian

AB The LD50 of RuO2 in rats was 4580 mg/kg, and mice 5570 mg/kg. At 21.4 mg/m3, RuO2 caused morphol. and functional changes in a no. of organs. The effect on the liver was reflected by changes in the content of serum proteins, increased content of lactic acid [50-21-5], and enhancement in the activity of alk. phosphatase [9001-78-9]; blood urea [57-13-6] N was also increased. The upper respiratory tract and lung were very much affected by RuO2. Thus, 21.4 mg/m3 dose of **RuO2** was quite **toxic**. The recommended max. permissible concn. of RuO2 in the **working** zone is 1 mg/m3.

L3 ANSWER 4 OF 5 CA COPYRIGHT 2004 ACS on STN

AN 86:60011 CA  
TI Nasal ulceration in **workers** exposed to ruthenium and platinum salts  
AU Harris, S.  
CS Wolverhampton, UK  
SO Journal of the Society of Occupational Medicine (1975), 25(4), 133-4  
AB Nasal ulceration or perforation can be caused by exposure to Ru salts.  
These ulcers eventually disappear in the absence of further exposure  
unlike those caused by Cr salts. Pt salts can cause allergic rhinitis  
or asthmatic attacks but not ulcerations of the nose.

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STN INTERNATIONAL LOGOFF AT 17:09:31 ON 04 MAY 2004

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(FILE 'HOME' ENTERED AT 14:57:28 ON 04 MAY 2004)

FILE 'CA' ENTERED AT 14:57:40 ON 04 MAY 2004

L1 99295 S (TOXIC? OR HAZARD? OR RUO2 OR RUO4 OR IRO4 OR  
RUTHEN?) (7A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSES? OR  
TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR  
SENSE# OR SENSING OR SENSOR OR IDENTIF? OR PROBE# OR PROBING OR  
QUANTIF? OR QUANTITAT? OR CHECK?)  
L2 79 S L1 AND(CVD OR VAPOR DEPOSITION)  
L3 875 S L1(L) (REACTOR OR REACTION(2A) (CHAMBER OR CONTAINER OR SPACE))  
L4 13 S L3 AND ELECTRODE  
L5 92 S L2,L4  
L6 46 S L5 NOT PY>1999  
L7 10 S L5 NOT L6 AND PATENT/DT  
L8 56 S L6-7  
L9 25 S L3 AND(LEAK? OR ESCAP?)  
L10 24 S L9 NOT L5  
L11 22 S (L10 NOT PY>1999)OR(L10 AND PATENT/DT)

=> d bib,ab 1-56 18

L8 ANSWER 8 OF 56 CA COPYRIGHT 2004 ACS on STN  
AN 135:250425 CA  
TI Method and apparatus for simulating standard test wafers  
IN Goldspring, Gregory J.; O'donnell, Robert J.  
PA Lam Research Corporation, USA  
SO U.S., 8 pp.  
PI US 6296778 B1 20011002 US 1999-282585 19990331  
PRAI US 1999-282585 A3 19990331  
AB A method and app. are provided for simulating a std. wafer in  
semiconductor manufg. equipment. The app. includes a support layer  
suitable for being handled by the semiconductor manufg. equipment.  
Applied to the support layer is a mixt. including a process agent and a  
material. During use, the present invention simulates a std. prodn.  
wafer including material similar to that in the mixt. of the present  
invention.

L8 ANSWER 14 OF 56 CA COPYRIGHT 2004 ACS on STN  
AN 130:342171 CA  
TI Modeling of toxic metal emissions from solid fuel combustors  
AU Yousif, S.; Lockwood, F. C.; Abbas, T.  
CS Thermofluids Section, Department of Mechanical Engineering, Imperial  
College of Science Technology and Medicine, London, SW7 2BX, UK  
SO Symposium (International) on Combustion, [Proceedings] (1998),  
27th(Vol. 2), 1647-1654  
AB Particulate matter emitted from solid-fuel combustors may contain toxic  
metals in concns. sufficient to endanger health. Metal contents are  
enriched in the sub-micron fraction, the one most likely to avoid  
capture by conventional collection devices and the one capable of deep  
pulmonary ingestion. Math. modeling to predict toxic metal emissions  
from solid-fuel combustors and of metals partitioning with respect to  
particle size is described. This model accounts for particle formation  
and growth by the combined effects of coagulation and metal **vapor  
deposition** on particle surfaces. Based on exptl. evidence, particle  
size distribution is sub-divided into 2 ranges: the sub-micron fraction  
and much larger residual ash particles. Conservation equations are  
solved for the total no. and mass concns. of particles. The modeling  
is included in an existing procedure for solid-fuel combustors  
combustion and applied to predict Pb and Cd emissions from a lab.  
combustor fired with coal and wastewater treatment sludge. Predicted  
emissions of these 2 metals and the metals enrichment in the sub-micron  
class compared rather well with measured values. Discrepancies were  
attributed to the effect of gas-phase and surface chem. reactions that,  
in the absence of kinetic data, were not modeled.

L8 ANSWER 17 OF 56 CA COPYRIGHT 2004 ACS on STN  
AN 130:274539 CA  
TI Epitaxial growth of RuO<sub>2</sub> thin films by metal-organic chemical **vapor  
deposition**  
AU Lu, P.; He, S.; Li, F. X.; Ji, Q. X.  
CS Department of Materials Science and Engineering, New Mexico Institute  
of Mining and Technology, Socorro, NM, 87801, USA  
SO Thin Solid Films (1999), 340(1,2), 140-144  
AB Conductive RuO<sub>2</sub> thin films were epitaxially grown on LaAlO<sub>3</sub> and MgO  
substrates by metal-org. **CVD** (MOCVD). The deposited RuO<sub>2</sub> films were  
crack-free, and well adhered to the substrates. The RuO<sub>2</sub> film is  
oriented on LaAlO<sub>3</sub> substrates at deposition temp. of 600° and oriented  
on MgO substrates at deposition temp. of 350° and above. The epitaxial  
growth of RuO<sub>2</sub> on MgO and LaAlO<sub>3</sub> is demonstrated by strong in-plane  
orientation of thin films with respect to the major axes of the  
substrates. The RuO<sub>2</sub> films on MgO contain 2 variants and form an  
orientation relation with MgO given by RuO<sub>2</sub>//MgO and  
RuO<sub>2</sub>[001]//MgO[011]. The RuO<sub>2</sub> films on LaAlO<sub>3</sub>, however, contain 4  
variants and form an orientation relation with LaAlO<sub>3</sub> given by  
RuO<sub>2</sub>//LaAlO<sub>3</sub> and RuO<sub>2</sub>[011]//LaAlO<sub>3</sub>[011]. Elec. **measurements** on the  
**RuO<sub>2</sub>** thin films deposited at 600° show room-temp. resistivities of ~ 40  
and ~ 50 μΩcm for the films deposited on the MgO and LaAlO<sub>3</sub> substrates,  
resp.

L8 ANSWER 23 OF 56 CA COPYRIGHT 2004 ACS on STN  
 AN 128:206428 CA  
 TI Hydride gas generator  
 AU Gordon, Roy G.; Chen, Feng  
 CS Harvard Univ. Chem. Lab., Cambridge, MA, 02138, USA  
 SO Proceedings - Electrochemical Society (1997), 97-25 (Chemical Vapor Deposition), 1313-1318  
 AB The gaseous hydrides of elements, such as silicon, germanium, phosphorus, arsenic, antimony, selenium and tellurium, are widely used in chem. **vapor deposition**. These hydrides are extremely hazardous because they are highly toxic and, in some cases, spontaneously flammable. **Test** a method is proposed for reducing the **hazards** of using these gases by generating them rapidly from less hazardous reactants. For example, silane gas is made by reacting liq. silicon tetrachloride with a suspension of solid sodium hydride in tetraglyme along with a catalytic amt. of sodium tributylborohydride. The method can easily be extended to the other hydride gases mentioned above, and to their mixts. with silane.

L8 ANSWER 41 OF 56 CA COPYRIGHT 2004 ACS on STN  
 AN 121:122944 CA  
 TI RuO<sub>2</sub> thin films as bottom electrodes for high dielectric constant materials  
 AU Yoshikawa, Kohta; Kimura, Takafumi; Noshiro, Hideyuki; Otani, Seigen; Yamada, Masao; Furumura, Yuji  
 CS Advanced Technology Division, Fujitsu Ltd., Kawasaki, 211, Japan  
 SO Japanese Journal of Applied Physics, Part 2: Letters (1994), 33(6B), 867-9  
 AB **Ruthenium** dioxide (RuO<sub>2</sub>) thin films are **evaluated** as a bottom electrode for SrTiO<sub>3</sub> in high-d. DRAM capacitors. A thin RuO<sub>2</sub> (50 nm)/Ru (20nm) layer on Si is quite effective as a barrier layer for both oxygen atoms and metals when depositing SrTiO<sub>3</sub> at a relatively low temp. of 450°C. To test its suitability for high-temp. processes such as **CVD** of SrTiO<sub>3</sub>, the RuO<sub>2</sub>/Ru electrode on Si was annealed in air at 600°C for 1 h. Even under this severe condition, the electrode using 100-nm-thick RuO<sub>2</sub> was sufficient for preventing oxygen diffusion into Si.

L8 ANSWER 42 OF 56 CA COPYRIGHT 2004 ACS on STN  
 AN 119:282475 CA  
 TI Chemical **vapor deposition** of ruthenium and osmium thin films using (hexafluoro-2-butyne)tetracarbonylruthenium and -osmium  
 AU Senzaki, Yoshihide; Gladfelter, Wayne L.; McCormick, Fred B.  
 CS Dep. Chem., Univ. Minnesota, Minneapolis, MN, 55455, USA  
 SO Chemistry of Materials (1993), 5(12), 1715-21  
 AB The known mononuclear ruthenium complex Ru(hfb)(CO)<sub>4</sub>, where hfb is hexafluoro-2-butyne, has a vapor pressure of 1.5 torr at 25° and forms reflective Ru thin films by chem. **vapor deposition (CVD)** using H<sub>2</sub> carrier gas with a growth rate of 21 nm/min at 500°. The resistivity of a Ru film having a grain size of 60 nm was 22 μΩ cm. Auger electron spectroscopy (AES), XPS, and x-ray diffraction (XRD) **analyses** indicated

that the films were pure, polycryst. **ruthenium** (<1% C, O, or F). SEM and XRD analyses revealed that the deposition temp. and the presence of H<sub>2</sub> gas affect the microstructure and the resistivity of the films. Os(hbf)(CO)<sub>4</sub> afforded polycryst. Os thin films using H<sub>2</sub> as a carrier gas. A growth rate of 14 nm/min, a resistivity of 81 μΩ cm, and a grain size of 20 nm were found for depositions conducted at 600°. XPS anal. indicated that the film consists of 84% Os, 7% O, and 9% C. The new dinuclear metal complexes [μ-η<sup>1</sup>:η<sup>1</sup>:η<sup>4</sup>-C<sub>4</sub>(CF<sub>3</sub>)<sub>4</sub>](CO)<sub>6</sub> (M = Ru, Os) were formed from M(hfb)(CO)<sub>4</sub> during the CVD processes conducted in the absence of H<sub>2</sub> gas at 150-300°.

L8 ANSWER 46 OF 56 CA COPYRIGHT 2004 ACS on STN

AN 119:55093 CA

TI Application of **hazard evaluation** techniques to the design of potentially **hazardous** industrial chemical processes. NIOSH instructional module

AU Kavarianian, H. R.; Rao, J. K.; Brown, G. V.

CS California State Univ., Long Beach, CA, USA

SO Report (1992), Order No. PB92-184290, 69 pp. Avail.: NTIS From: Gov. Rep. Announce. Index (U. S.) 1992, 92(16), Abstr. No. 244,638

AB The instructional module presents specific case studies which highlight the importance of applying system safety techniques to design and operation of potentially hazardous processes. When applied properly, these techniques can identify and rectify hidden system failure modes that would otherwise contribute to accidents. Descriptions are offered of 7 different techniques for **analyzing hazards**: preliminary **hazard anal.**, what if **anal.**, failure modes effects and criticality **anal.**, **hazard** and operability study, fault tree **anal.**, event tree **anal.**, and cause/consequence **anal.** Preliminary design of 5 potentially **hazardous** processes was considered using several of these **evaluation** techniques. The processes included metal org. chem. **vapor deposition**, an ethylene prodn. facility, an alkylation process, a high pressure/low d. polyethylene facility, and the batch process of industrial and military explosive prodn. The importance of including **hazard evaluation** procedures at the senior level in all engineering courses was stressed.

L8 ANSWER 48 OF 56 CA COPYRIGHT 2004 ACS on STN

AN 116:86914 CA

TI Use of the HAZOP analysis for evaluation of **CVD** reactors

AU Crawford, W. W.; Zuber, J. R.; Knolle, W. R.

CS AT and T Bell Lab., Allentown, PA, 18103, USA

SO Journal de Physique IV: Proceedings (1991), 1(C2, Proc. Eur. Conf. Chem. Vap. Deposition, 8th, 1991), C2/459-C2/466

AB A **hazard** operability (HAZOP) **anal.** for **evaluation** of chem. **vapor deposition** (**CVD**) reactors proved to be an effective tool. A sample HAZOP **anal.** and a short questionnaire that needs to be completed (before the HAZOP **anal.** begins) are given.

L8 ANSWER 49 OF 56 CA COPYRIGHT 2004 ACS on STN

AN 115:173734 CA

TI Ruthenium sensor with an oscillator

IN Arai, Yuko; Honda, Taku  
PA Hitachi, Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
PI JP 03048748 A2 19910301 JP 1989-183790 19890718  
PRAI JP 1989-183790 19890718  
AB The Ru sensor, esp. useful in nuclear fuel reprocessing plants, comprises an oscillator equipped with **electrodes** and org. films on an **electrode**. The shift in resonance frequency of the oscillator is detd., as RuO4 is reduced to RuO2 and deposited, causing a wt. increase on the org. film.

L8 ANSWER 52 OF 56 CA COPYRIGHT 2004 ACS on STN  
AN 111:15669 CA  
TI Safety measures in chemical **vapor deposition** apparatus for semiconductors  
IN Komura, Yukio; Koaizawa, Hisashi; Ikeda, Masakyo  
PA Furukawa Electric Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
PI JP 63280414 A2 19881117 JP 1987-114486 19870513  
JP 07073100 B4 19950802  
PRAI JP 1987-114486 19870513

AB The title app. is provided with a const. supply of an inactive gas to envelop the reactor, which is housed in a cabinet which is, in turn, constantly evacuated, and, optionally, provision may be made to supply a large amt. of the inactive gas in case a leak of a **hazardous** gas is **detected**. Thus, N2 gas was supplied around a reactor into which GaMe3, ASH3, and H2 were supplied.

L8 ANSWER 53 OF 56 CA COPYRIGHT 2004 ACS on STN  
AN 109:213510 CA  
TI Interaction of safety and the facility for photovoltaic R & D  
AU Gale, R. P.; Salerno, J. P.; Zavracky, P. M.; Brissette, W. P.  
CS Kopin Corp., Taunton, MA, 02780, USA  
SO AIP Conference Proceedings (1988), 166(Photovoltaic Saf.), 145-51  
AB Material handling procedures (chems. and wastes) at the Kopin Corp., in manuf. of GaAs/AlGaAs solar cells by metalorg. chem. **vapor deposition** are described, as are the safety features of the facility. Feedstock handling (acids and bases, H, Me3Ga, Me3Al); waste handling procedures at point-of-use and transport to collection points for off-site treatment, toxic material collection (As, GaAs); and safety systems (spill control, process alarms, and fire alarms) are described. The process alarm system **monitors** GaAs deposition and includes smoke, H, and **toxic gas detection** as well as room and building evacuation alarms and automatic H shut-off.

=> d bib,ab 111 1-22

L11 ANSWER 3 OF 22 CA COPYRIGHT 2004 ACS on STN  
AN 127:198104 CA  
TI Low temperature vapor phase epitaxial system for depositing thin layers of silicon-germanium alloy

IN Crumbaker, Todd E.  
 PA United States Dept. of the Air Force, USA  
 SO U.S., 6 pp.  
 PI US 5653807 A 19970805 US 1996-623593 19960328  
 PRAI US 1996-623593 19960328  
 AB An epitaxial film deposition system has a low vacuum venturi pump for initially partially purging the system of toxic gases, and a high vacuum turbo-mol. pump to further sharply reduce the pressure to maximize **toxic** gas purging along with the **detection** of any slight **leaks** of **toxic** gases in the system. A source gas mixing manifold has an array of gas feed lines laid out in a rectangular array for forwarding the gases to the **reactor** furnace, wherein each feed line has an equal path length between each run valve of the mixing manifold and the **reactor** to minimize switching transient variations.

L11 ANSWER 5 OF 22 CA COPYRIGHT 2004 ACS on STN  
 AN 121:268061 CA  
 TI Growth of pseudomorphic ZnSe/(100)GaAs by atomic layer epitaxy  
 AU Lee, Chae Deok; Lim, Chan; Lim, Byung Ho; Noh, Min Soo; Park, Hong Lee; Chung, Choong Hyun; Chang, Soo Kyung  
 CS Dep. Phys., Yonsei Univ., Seoul, 120-749, S. Korea  
 SO Ungyong Mulli (1992), 5(4), 412-17  
 LA Korean  
 AB The ALE (at. layer epitaxy) growth system, a film growth system with control at the monolayer level, was constructed, focusing on the design of **reactor** and susceptor. The ALE system has 4 subsystems: (1) the gas feed system, the role of which is to keep the source gases safely and to transfer gas to the **reactor**; (2) the **reactor** system including the susceptor for the alternative supply of source gases; (3) the exhaust system through which all gases, reacted or unreacted, are exhausted; and (4) the **toxic** gas **detection** system for **detection** of **leakage** of **toxic** source gas (i.e. H<sub>2</sub>Se).

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STN INTERNATIONAL LOGOFF AT 15:09:36 ON 04 MAY 2004